

A RE-EVALUATION OF THE SOUTH AFRICAN SPECIES OF
LEMBOIDES STEBBING AND *LEMBOS* BATE
 (AMPHIPODA, AORIDAE) DESCRIBED BY
 K. H. BARNARD (1916)

By

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(With 9 figures)

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ABSTRACT

Barnard (1916) described three new species of aorid amphipod, *Lembos hypacanthus*, *Lemboides acanthiger* and *Lemboides crenatipalma* from South Africa. These were poorly figured, and have not since been fully figured or redescribed, although their distribution in South African waters has been assessed by Griffiths (1974a, 1974b, 1974c, 1975). Until now, none was known from outside South Africa.

In the present work, all three species are described and figured, *Lemboides crenatipalma* is transferred to the genus *Aorchoides* Ledoyer (family Isaeidae) and *Lembos hypacanthus* is recorded for the first time from North America. *Lemboides afer* Stebbing, a South African endemic, and the type-species of the genus, is also described and figured for comparison with *L. acanthiger*.

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INTRODUCTION

The genus *Lemboides* was described by Stebbing (1895) to include the single South African species *L. afer* Stebbing. Later, K. H. Barnard (1916) described two further South African species, *L. acanthiger* and *L. crenatipalma*, which he ascribed to the same genus. To date, no further South African species have been added to the genus. The genus has been recorded from outside South Africa (Australia and Madagascar), but the relationships of these species are not considered here (see Myers in press).

In the present work, material of all three South African species of *Lemboides*

was examined, together with material of the poorly known aorid *Lembos hypacanthus* Barnard. Preliminary investigation revealed that *Lemboides crenatipalma* should be removed from the family Aoridae and transferred to the Isaeidae. It is described and figured herein and placed in the genus *Aorchoides* Ledoyer. *Lemboides acanthiger* is difficult to assign and brings into question the validity of the genus *Lemboides*. Stebbing (1895) gives only a single character separating *Lemboides* from *Lembos*, viz.: male gnathopod 1 'fifth joint is much broader and longer than sixth'. Whilst this is true of *Lemboides afer*, the type-species, it does not apply to *L. acanthiger*, in which the carpus and propodus of the male gnathopod 1 are subequal, just as they are in *Lembos hypacanthus*. However, synonymization of *Lemboides* with *Lembos* would not be advisable at this stage, since *Lemboides* differs from the type-species of *Lembos*, i.e. *L. websteri* (though not from most other species of the genus), by the short peduncle of uropod 3. The splitting of the genus *Lembos* into several component genera is being proposed elsewhere (Myers in press). A character of phylogenetic significance is exhibited by the maxilliped of *L. hypacanthus*. Wing-like extensions occur on the anterior margin of the inner and outer plate of this appendage. This character is also present in some, but not all, *Microdeutopus* species, and in *L. websteri*. *Lembos websteri* is unique among *Lembos* in having the uropod 3 rami subequal and equal in length with the elongate peduncle, a character shared with *Microdeutopus* sensu stricto. Thus *L. websteri* in its maxilliped and uropod 3 structure aligns itself with *Microdeutopus* rather than with other *Lembos* species. This is nomenclaturally confusing, since *L. websteri* is the type-species of the genus. *Lembos hypacanthus*, which forms a geminate pair with *L. websteri*, is here shown to be transatlantic. In the East Atlantic *L. websteri* and *L. hypacanthus* are widely allopatric. In the West Atlantic their distributions have not yet been worked out, but they are probably closely allopatric or parapatric.

SYSTEMATIC SECTION

Family Isaeidae Dana, 1853

Genus *Aorchoides* Ledoyer, 1972

Aorchoides crenatipalma (K. H. Barnard, 1916) comb. nov.

Figs 1A, 2-3

Lemboides crenatipalma K. H. Barnard, 1916: 240, pl. 28 (figs 9-10). Griffiths, 1976: 34, fig. 18C.

Type locality

Baboon Point ENE, distant 13 miles (off Saldanha Bay), 32 fathoms.

Material examined

SAM-A18949, 13 ♂, 24 ♀, Skrywershoek, Langebaan Lagoon, mud, 26 April 1949, UCT LB189P. SAM-A19396, 1 ♂, 1 ♀, 26°35'S 15°01'E, 71 m, rock, 10 June 1963, UCT SWD13T. SAM-A19397, 1 ♂, 1 ♀, 25°51'S 14°50.7'E, 60 m, 13 November 1948, UCT AFR1335A. SAM-A19398, 3 ♂, 1 ♀, 32°44'S 18°01'E, 11 m, 22 September 1960, UCT WCD68B.

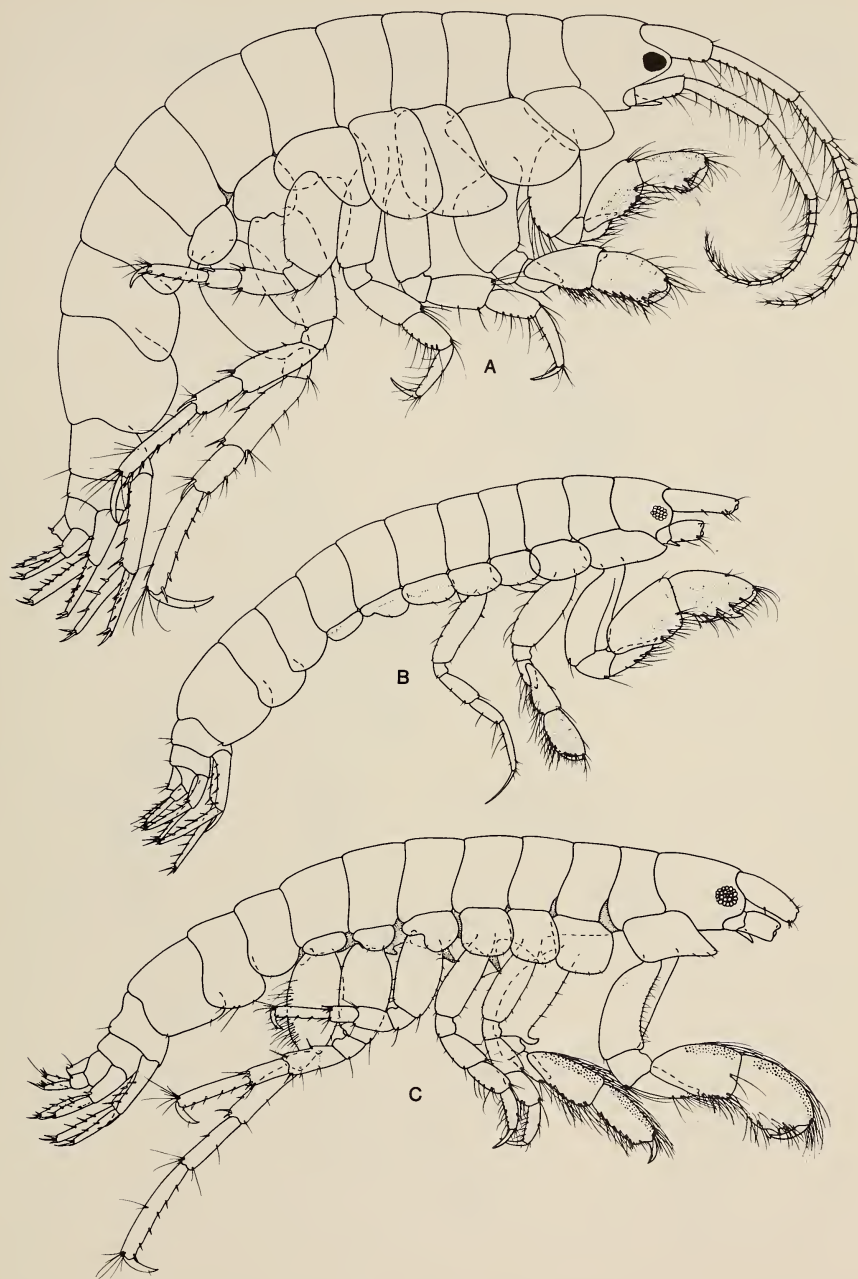


Fig. 1. A. *Aorchoides crenatipalma* (K. H. Barnard), male, 9,0 mm, Skrywershoek.
B. *Lemboides acanthiger* K. H. Barnard, male, 5,5 mm, Natal.
C. *Lembos hypacanthus* K. H. Barnard, male, 6,0 mm, Dalebrook (False Bay).



Fig. 2. *Aorchoides crenatipalma* (K. H. Barnard), male, 7,0 mm, Langebaan Lagoon. A. Gnathopod 2. B. Gnathopod 2 palm (enlarged). C. Gnathopod 1. D. Gnathopod 1 palm (enlarged). E. Maxilla 2. F. Mandible. G. Labrum. H. Labium. I, J, L. Maxilliped. K. Maxilla 1.

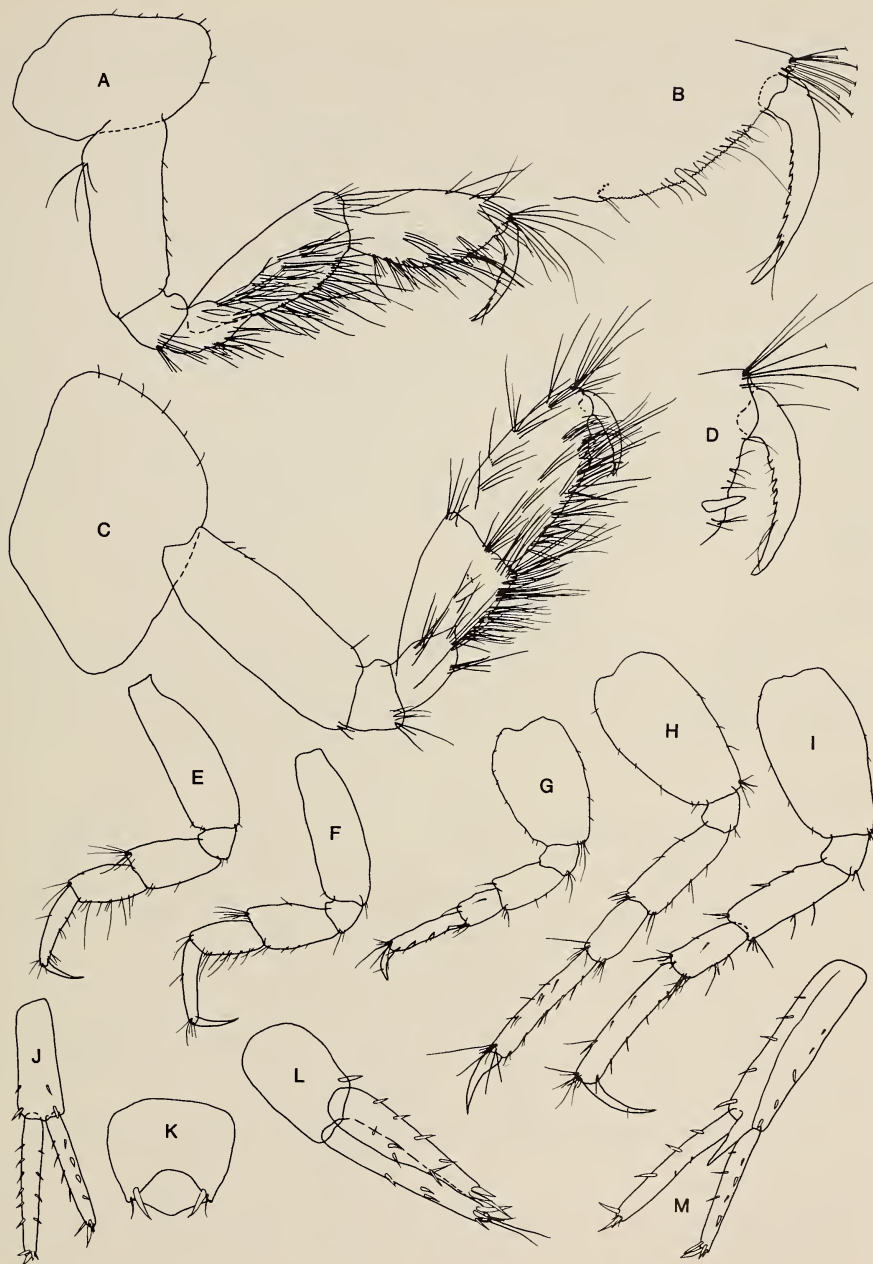


Fig. 3. *Aorchoides crenatipalma* (K. H. Barnard), female, 8,0 mm, Langebaan Lagoon. A. Gnathopod 1. B. Gnathopod 1 palm (enlarged). C. Gnathopod 2. D. Gnathopod 2 palm (enlarged). E. Pereopod 3. F. Pereopod 4. G. Pereopod 5. H. Pereopod 6. I. Pereopod 7. J. Uropod 2. K. Telson. L. Uropod 3. M. Uropod 1.

Description

Head with eye lobes strongly produced, subocular margin strongly excavate, eye situated in ocular lobe. Antennae 1 and 2 subequal, setose, accessory flagellum 3-articulate, antenna 2 slender. Labium mandibular lobes only moderately produced, subacute. Mandibular palp article 2 longer than article 3, article 3 truncate, approximately parallel-sided. Coxae 1–4 longer than broad, coxa 3 longest, produced forward distally. Gnathopod 1 ♂ basis enlarged, posterior distal margin with long setae, carpus slender, longer than propodus, propodus slender, palm evenly rounded (subadults) or produced into weak triangular defining tooth (hyperadults). Gnathopod 1 ♀ slender, carpus longer than propodus. Gnathopod 2 ♂ robust, basis maximally two-thirds as broad as long, carpus longer than propodus, palm defined by triangular tooth. Gnathopod 2 ♀ slender, propodus a little longer than carpus, palm irregular. Pereopod 7 scarcely longer than pereopod 6. Epimera 1–3 rounded. Uropod 1 peduncle longer than rami with interramal tooth. Uropod 2 inner ramus longer than outer and longer than peduncle, which lacks an interramal tooth. Uropod 3 peduncle short, inner ramus one and a half times length of peduncle. Telsonic crests each with a stout spine.

Remarks

This species shows numerous characters that indicate its isaeid ancestry. Notably, the setose subequal antennae, slender antenna 2, extended eye lobes, strongly regressed subocular margin. The deep coxae and short pereopod 7 immediately distinguish it from *Lembos* and *Lemboides* species.

Distribution

Southern African endemic.

Family *Aoridae* Stebbing, 1899

Genus *Lemboides* Stebbing, 1895

Lemboides acanthiger K. H. Barnard, 1916

Figs 1B, 4–5

Lemboides acanthiger K. H. Barnard, 1916: 239, pl. 28 (figs 7–8). Griffiths, 1976: 34, fig. 18A.

Type locality

Umvoti River mouth N by W $\frac{1}{4}$ W, distant 15 miles (Natal), 56 fathoms.

Material examined

SAM-A18947, 2 ♂, 1 ♀, Natal, 29°53'S 31°06'E, 71 m, mud, 13 July 1959, UCT NAD27C.

Description

Head with eye lobes moderately produced, eye small. Antennae missing in all material examined. Labium mandibular lobes acute. Mandibular palp article 3



Fig. 4. *Lembooides acanthiger* K. H. Barnard, female, 6,0 mm, Natal. A. Gnathopod 2 palm (enlarged). B. Gnathopod 2. C. Labrum. D. Labium. E. Gnathopod 1. F. Gnathopod 1 palm (enlarged). G. Mandible. H. Mandible palp article 3 (enlarged). I. Maxilla 1. J, M, N. Maxilliped. K. Mandible—spine row and lacinia mobilis (enlarged). L. Maxilla 2.



Fig. 5. *Lembooides acanthiger* K. H. Barnard, male, 6.0 mm, Natal. A. Gnathopod 1 palm (enlarged). B. Gnathopod 1. C. Gnathopod 2. D. Gnathopod 2 palm (enlarged). E. Uropod 1. F. Uropod 2. G. Uropod 3. H. Telson.

longest, terminally falcate. Coxae 1–4 shallow, coxa 1 elongate, broader than deep, produced forward, subacute. Gnathopod 1 ♂ basis robust, carpus and propodus subequal in length, propodus palm irregular, defined by strong acute tooth, dactylus very strongly overlapping palm. Gnathopod 1 ♀ slender, propodus a little longer than carpus, palm weakly sinuous and crenulate, dactylus elongate, overlapping palm. Gnathopod 2 ♂ carpus and propodus subequal in length but propodus broader, palm weakly concave, crenulate, dactylus overlapping palm. Gnathopod 2 ♀ similar to that of ♂ but basis more slender, palm regular. Pereopods 5–7 missing in all material examined. Epimera 1–2 rounded, epimeron 3 with small posterodistal tooth. Uropods 1–2 with strong interrampal tooth. Uropod 1 peduncle a little shorter than subequal rami. Uropod 2 peduncle very short, rami more than twice length of peduncle, telsonic crests each with a pair of setae.

Remarks

Lemboides acanthiger and *L. afer* together resemble Atlanto–East Pacific *Microdeutopus* (raised to generic level in Myers in press) in the very short peduncle and spinose rami of uropod 3. By contrast, East Atlantic–Mediterranean *Microdeutopus* have elongate uropod 3 peduncles, whilst Indo-Pacific *Lembos* sensu lato have elongate setae on the rami. For the present, the genus *Lemboides* is retained for these two species.

Distribution

Southern African endemic.

Lemboides afer Stebbing, 1895

Figs 6–7

Lemboides afer Stebbing, 1895: 209, pls 9–10. K. H. Barnard, 1932: 222, fig. 137. Griffiths, 1976: 34, fig. 18B.

Type locality

Cape of Good Hope.

Material examined

SAM-A19399, 3 ♂, 2 ♀, off Oatland Point, 34°12'S 18°29'E, 33–36 m, 5 March 1952, UCT FAL31H. SAM-A19400, 1 ♂, 1 ♀, 34°19,3'S 18°32,3'E, 58 m, 8 September 1956, UCT TRA111P. SAM-A18948, 20 ♂, 26 ♀, Skrywershoek, Langebaan Lagoon, LWS and below, 26 April 1949, UCT LB191S.

Description

Head with eye lobes moderately produced, eye small. Antennae weakly setiferous; antenna 1 short, about one-third body length, antenna 2 subpediform, shorter than antenna 1. Labium mandibular lobes acute. Mandibular palp



Fig. 6. *Lembooides afer* Stebbing, female, 7.0 mm, Oatland Point. A. Gnathopod 2. B. Labrum. C. Maxilla 2. D. Maxilla 1. E. Labium. F. Gnathopod 2 palm (enlarged). G. Gnathopod 1. H. Gnathopod 1 palm (enlarged). I. Mandible. J. Mandible palp article 3 (enlarged). K. Mandible—spine row and lacinia mobilis (enlarged). L-N. Maxilliped.

articles 2 and 3 subequal in length, article 3 with distal part of anterior margin weakly concave. Coxae 1–4 shallow; coxa 1 elongate, broader than deep, rounded. Gnathopod 1 ♂ basis robust, carpus enormous with posterodistal margin weakly produced into irregular lobe, propodus short, a little over one-half length of carpus, palm defined by two irregularly triangular processes, dactylus short. Gnathopod 1 ♀ carpus only a little longer than propodus, propodus with crenulated palm. Gnathopod 2 ♂ basis with anterior margin produced into a crenulated flange, carpus enlarged, anterior margin with long setae, propodus short, a little over one-half length of carpus, palm with V-shaped crenulate-sided excavation defined by a triangular tooth bearing a spine, dactylus short. Gnathopod 2 ♀ basis elongate, anterior margin with long setae, basis swollen medially, anterior margin with very long sieve-setae, propodus elongate and slender, a little longer than carpus, palm short, irregular, defined by two spines, dactylus short, fitting palm. Pereopod 7 distinctly longer than pereopod 6. Epimera 1–3 rounded. Uropods 1–2 with interrampal peduncular tooth. Uropod 1 peduncle and rami subequal. Uropod 2 inner ramus longer than outer

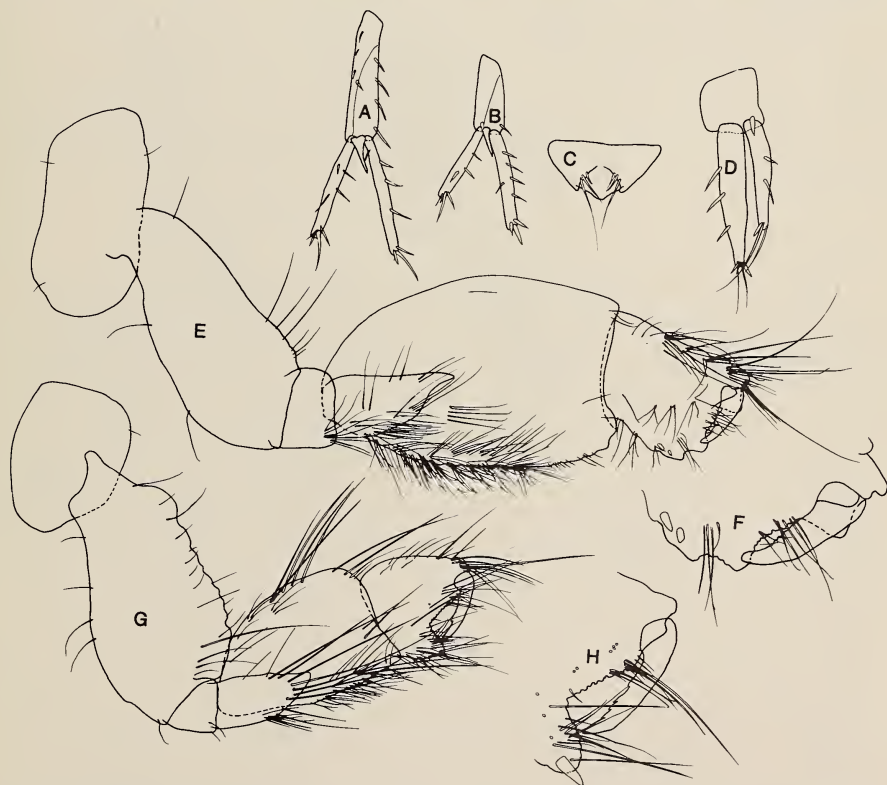


Fig. 7. *Lembooides afer* Stebbing, male, 6.0 mm, Oatland Point. A. Uropod 1. B. Uropod 2. C. Telson. D. Uropod 3. E. Gnathopod 1. F. Gnathopod 1 palm (enlarged). G. Gnathopod 2. H. Gnathopod 2 palm (enlarged).

ramus and longer than peduncle. Uropod 3 peduncle very short, inner ramus longer than outer and more than twice length of peduncle. Telsonic crests each with 4–5 setae.

Remarks

For relationships, see comments under previous species.

Distribution

Southern African endemic.

Lembos hypacanthus K. H. Barnard, 1916

Figs 1C, 8–9

Lembos hypacanthus K. H. Barnard, 1916: 237, pl. 28 (figs 5–6). Griffiths, 1976: 34, fig. 18D.
Lembos sp. Fox, 1978: 162.

Type locality

Sea Point, near Cape Town.

Material examined

SAM-A18951, 1 ♂, 1 ♀, Dalebrook (False Bay), intertidal, 14 September 1955, UCT CP439E. 67 ♂, 59 ♀, 21 immature, Brevard C, Florida. 13 ♂, 24 ♀, North Carolina.

Description

Head with eye lobes moderately produced; eye of medium size. Antennae weakly setiferous; antenna 1 about two-thirds body length, antenna 2 subpediform, shorter than antenna 1. Labium mandibular lobes acute. Mandibular palp article 3 longer than 2, distinctly falcate. Coxae 1–4 shallow; coxa 1 anterodistal margin produced, acute. Gnathopod 1 ♂ basis robust, inner face with a proximal tooth, carpus and propodus subequal in length and breadth, anterior margin densely setose, propodus with a short crenulate palm, followed by a deep excavation posterior to which is a slender tooth and a defining hump bearing a spine, dactylus short. Gnathopod 1 ♀ propodus slightly longer than carpus, palm irregularly rounded, defined by a spine. Gnathopod 2 ♂ basis with falcate anterodistal tooth, carpus and propodus elongate, especially so in American material, anterior margin of both podomeres densely setose, dactylus short but overlapping short palm. Gnathopod 2 ♀ similar to that of ♂ but a little less setose. Pereopod 7 distinctly longer than pereopod 6. Epimera 1–2 rounded. Epimeron 3 with small posterodistal tooth. Uropod 1 peduncle and inner ramus subequal, inner ramus longer than outer. Uropod 2 peduncle shorter than inner ramus, inner ramus longer than outer. Uropod 3 peduncle unexpanded, rami subequal, a little longer than peduncle. Telsonic crests each with a pair of unequal length setae.



Fig. 8. *Lembos hypacanthus* K. H. Barnard, male, 6.0 mm, False Bay. A. Gnathopod 1 palm (enlarged). B. Gnathopod 1. C. Labium. D. Gnathopod 2 palm (enlarged). E. Labrum. F. Gnathopod 2. G-I. Maxilliped. J. Maxilla 1. K. Mandible palp article 3 (enlarged). L. Mandible—spine row and lacinia mobilis (enlarged). M. Mandible.

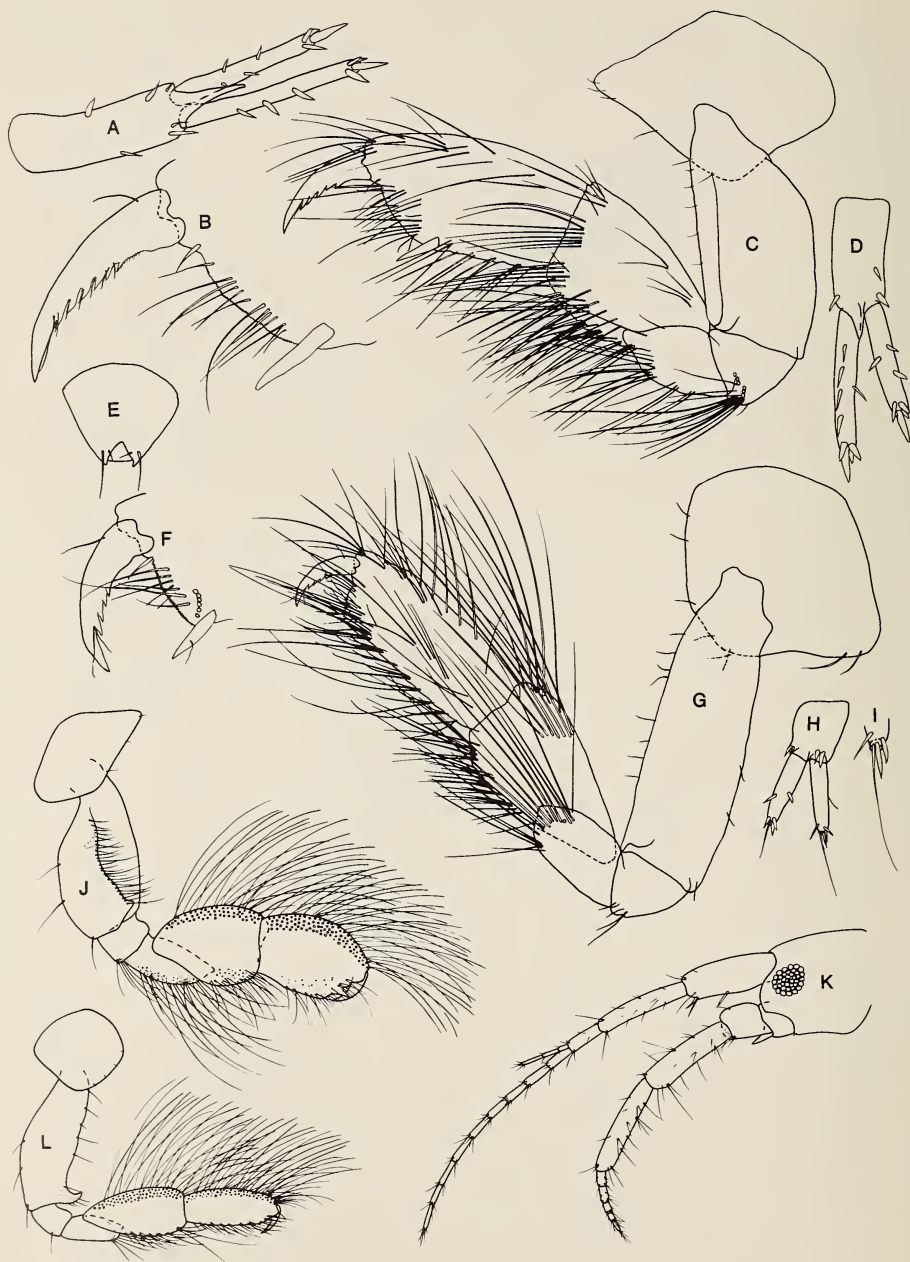


Fig. 9. *Lembos hypacanthus* K. H. Barnard. A-I. Female, 5,5 mm, False Bay. A. Uropod 1. B. Gnathopod 1 palm (enlarged). C. Gnathopod 1. D. Uropod. E. Telson. F. Gnathopod 2 palm (enlarged). G. Gnathopod 2. H. Uropod 3. I. Uropod 3—tip of inner ramus. J-L. Male, 6,0 mm, North Carolina. J. Gnathopod 1. K. Head. L. Gnathopod 2.

Remarks

The maxilliped flanges and form of the male gnathopod 1 clearly place this species close to *L. websteri*, the type-species of the genus.

Distribution

Originally thought to be a South African endemic, this species is now known to occur also in the West Atlantic.

DISCUSSION

The present study has revealed a close biogeographical relationship between the *Lemboides* and *Lembos* species of southern Africa and those of the Atlanto-East Pacific. *Lemboides* sensu stricto has its closest relationships with Atlanto-East Pacific *Microdeutopus*, and *Lembos hypacanthus* is now shown to be transatlantic. *Lembos websteri*, the sister species closest to *L. hypacanthus*, is also known from both eastern North America and the north-eastern Atlantic-Mediterranean. These distributions may be best explained as relictual, resulting from the opening-up of the Atlantic by tectonic activity in the early Tertiary. This contrasts with what is known of the distribution of the genus *Aora*, which is also present in southern Africa and appears to have Gondwanian or transantarctic affinities.

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